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No. 10-1122

SUPREME COURT, U.S.
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In The Supreme Court of the United States

JEFF TAMRAZ AND TERRY TAMRAZ,
Petitioners,

v.

LINCOLN ELECTRIC COMPANY; HOBART BROTHERS COMPANY; ESAB GROUP, INC. AND TDY INDUSTRIES, INC.,
Respondents.

On Petition For A Writ Of Certiorari To The United States Court Of Appeals For The Sixth Circuit

BRIEF IN OPPOSITION

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Questions Presented

1. Whether the court of appeals properly ruled that a doctor's opinion that manganese exposure caused the plaintiff to develop Parkinson's disease – a disease with no known cause – was unreliable and therefore inadmissible because it was, in the doctor's own words, "speculative."

2. Whether the court of appeals applied the right standard in ruling that the district court abused its discretion by admitting unreliable expert testimony.

Corporate Disclosure Statement

Pursuant to Supreme Court Rule 29.6, respondents state that The Lincoln Electric Company is a wholly-owned subsidiary of Lincoln Electric Holdings, Inc., a publicly traded company. No publicly traded company owns more than 10% of the stock of Lincoln Electric Holdings, Inc. Hobart Brothers Company is a wholly-owned subsidiary of Illinois Tool Works Inc., a publicly traded corporation. No publicly traded company owns more than 10% of the stock of Illinois Tool Works Inc. The ultimate parent company of The ESAB Group, Inc. is Charter International plc, a publicly held company traded on the London Stock Exchange. No publicly held company owns more than 10% of the stock of Charter plc. TDY Industries, Inc., is a wholly owned subsidiary of TDY Holdings LLC, which is a wholly owned subsidiary of Allegheny Technologies Incorporated. No publicly traded company owns more than 10% of the stock of Allegheny Technologies Incorporated.

Table Of Contents

Questions Presented i

Corporate Disclosure Statement ii

Table Of Contents iii

Table Of Authorities iv

INTRODUCTION AND STATEMENT OF THE CASE 1

REASONS FOR DENYING THE PETITION 9

I. The Sixth Circuit's Ruling Does Not Conflict With Those Of Other Circuits Regarding The "Ruling Out" Phase Of Differential Etiologies 9

II. The Sixth Circuit's Ruling Does Not Depart From This Court's Precedent Regarding The Standard Of Review. 14

CONCLUSION 19

Table of Authorities

Cases

In re Air Crash Disaster at New Orleans, La.,
795 F.2d 1230 (5th Cir. 1986) 15

Amorgianos v. National R.R. Passenger Corp.,
303 F.3d 256 (2d Cir. 2002) 13

Best v. Lowe's Home Ctrs., Inc.,
563 F.3d 171 (6th Cir. 2009) 10

Bland v. Verizon Wireless, (VAW) LLC,
538 F.3d 893 (8th Cir. 2008) 11

Cooper v. Smith & Nephew, Inc.,
259 F.3d 194 (4th Cir. 2001) 12

Cruz-Vazquez v. Mennonite General Hospital, Inc.,
613 F.3d 54 (1st Cir. 2010) 15

Daubert v. Merrell Dow Pharms., Inc.,
509 U.S. 579 (1993) 1

Ervin v. Johnson & Johnson, Inc.,
492 F.3d 901 (7th Cir. 2007) 12

Feit v. Great W. Life & Annuity Ins. Co.,
271 F. App'x 246 (3d Cir. 2008) 12

Glastetter v. Novartis Pharms. Corp.,
252 F.3d 986 (8th Cir. 2001) 13

Guinn v. Astrazeneca Pharms. LP,
602 F.3d 1245 (11th Cir. 2010) 12

Gumbs v. International Harvester, Inc.,
718 F.2d 88 (3d Cir. 1983) 15

Heller v. Shaw Industries, Inc.,
167 F.3d 146 (3d Cir. 1999) 9, 11

J.B. Hunt Transport, Inc., v. Gen. Motors Corp.,
243 F.3d 441 (8th Cir. 2001) 16

Joy v. Bell Helicopter Textron, Inc.,
999 F.2d 549 (D.C. Cir. 1993) 15

Kumho Tire Co. v. Carmichael,
526 U.S. 137 (1999) 15

McClain v. Metabolife International, Inc.,
401 F.3d 1233 (11th Cir. 2005) 15

Moore v. Ashland Chemical, Inc.,
151 F.3d 269 (5th Cir. 1998) 13

Norris v. Baxter Healthcare Corp.,
397 F.3d 878 (10th Cir. 2005) 13

In re Welding Rod Prods. Liab. Litig.,
269 F. Supp. 2d 1365 (J.P.M.L. 2003) 3

Westberry v. Gislaved Gummi AB,
178 F.3d 257 (4th Cir. 1999) 11

Other Authorities

Eugene Gressman et al.,
Supreme Court Practice (9th ed. 2007) 14

Irene Litvan et al.,
The etiopathogenesis of Parkinson's disease and suggestions for future research: Part II,
J. Neuropathol. Exp. Neurol. 66(5):329-336 (2007) 17

INTRODUCTION AND STATEMENT OF THE CASE

The court of appeals' holding in this case – that the trial court abused its discretion in admitting medical causation testimony from a physician who described his own opinions as "speculative" – was neither remarkable nor controversial. Rather, it derived directly from this Court's ruling in *Daubert v. Merrell Dow Pharmaceuticals, Inc.* that scientific "'knowledge' connotes more than subjective belief or unsupported speculation." 509 U.S. 579, 590 (1993). Nonetheless, petitioners conjure up a supposed circuit split on the admissibility of a doctor's "differential etiology" and argue that the court of appeals covertly applied a *de novo* standard of review instead of the required abuse-of-discretion standard.

Neither issue warrants this Court's review. Petitioners have not identified any disagreement among the lower courts or departure from this Court's precedents. Although they assert – with almost no explanation – that the ruling below applied a higher standard for differential etiologies than is required by the Third or Fourth Circuits, that argument misconstrues the ruling below and ignores harmonious decisions from both circuits. Nor is there any merit to petitioners' allegation that the court of appeals departed from this Court's precedents by applying a *de novo* standard of review. Indeed, the court of appeals expressly stated that it was applying an abuse-of-discretion standard. Petitioners call this "lip service" (Pet. 15), echoing the dissent below. But the dissent advocated a level of deference to district courts that has been expressly rejected by courts of appeal and by Justices of this Court.

In short, speculative testimony has no place in the courtroom – and the court of appeals properly found that the district court abused its discretion in admitting medical causation testimony that was premised on multiple "speculative jumps."

1. The Welding Process. Respondents The Lincoln Electric Company, Hobart Brothers Company, The ESAB Group, Inc. and TDY Industries, Inc. are current and former manufacturers of welding consumables. Welding is the process of joining two pieces of "base metal" by heating their surfaces while adding new molten metal. The vast majority of industrial welding has always involved mild steel, which is composed of iron plus a small amount of carbon and other alloys. One such alloy is manganese, which gives steel toughness and hardness, and de-oxidizes and de-sulfurizes the steel. To obtain an effective weld, the welding material or "consumable" used to join the two pieces of base metal must be compatible with the base metal. Because most steel contains manganese, manganese has been present in most welding consumable products from the inception of welding, and it has no substitute.

The high heat generated in the welding process necessarily releases particulate fumes, known as "welding fumes." Because manganese is present in both the base metal and the welding consumables, manganese is one of the elements in welding fumes.

Nobody disputes that exposure to certain levels of manganese is safe. In fact, manganese is an essential nutrient. At extremely high levels of exposure, however, manganese can become toxic and can cause, in certain cases, a very rare neurological disease called manganism. Manganism is distinct from an-

other neurological condition, Parkinson's disease ("PD") – an "idiopathic" disease that has no known cause or explanation and afflicts more than a million Americans.

2. Welding Fume Litigation. About a decade ago, a group of plaintiffs' lawyers, working with a neurologist, Dr. Paul Nausieda, began conducting mass medical screenings of welders and filing lawsuits, alleging that exposure to manganese in welding fumes had caused the welders to develop a rare neurological disease known as manganism. With the number of welding fume cases rising, the Judicial Panel on Multidistrict Litigation created a multidistrict litigation proceeding before Judge Kathleen O'Malley of the United States District Court for the Northern District of Ohio to coordinate welding fume cases for pretrial proceedings. *In re Welding Rod Prods. Liab. Litig.*, 269 F. Supp. 2d 1365 (J.P.M.L. 2003).

3. Petitioners' Suit. In September 2004, petitioners sued several current and former welding consumable manufacturers, contending that as a result of exposure to manganese and manganese compounds in welding fumes, Mr. Tamraz developed permanent and severe neurological damage. Petitioners alleged that the labels on the products failed to warn of this danger. Their case was consolidated with ongoing multidistrict litigation and was selected as one of several "bellwether trials" that would guide the resolution of the other cases.

At trial, petitioners called Dr. Nausieda, who testified that the plaintiff has manganism. They also introduced the testimony of Dr. Walter Carlini, Mr. Tamraz's treating physician. Dr. Carlini diagnosed Mr. Tamraz with PD – a valid and reliable diagnosis

that respondents did not challenge. But he did not stop there. Instead, Dr. Carlini also offered a hypothesis as to the *cause* of Mr. Tamraz's disease: that he had an unusual genetic predisposition to PD that was triggered by exposure to manganese in welding fumes. There was no science to support this hypothesis; as Dr. Carlini himself admitted, it was based on sheer speculation. Dr. Carlini simply professed faith that some day in the future, researchers will identify a link between genetics, manganese exposure and PD.

Respondents moved to exclude Dr. Carlini's causal opinion, citing his admission that it was based solely on his own speculation, rather than any published literature or scientific studies. Petitioners responded that Dr. Carlini had offered a reliable opinion based on a differential diagnosis. Their primary argument was that Dr. Carlini had actually diagnosed Tamraz with "manganese-induced parkinsonism," which, they argued, was simply another term for manganism. Since manganism is caused only by manganese exposure, they posited, a reliable diagnosis of the illness obviated the need for a reliable analysis of its cause. But this argument was not based in reality, because Dr. Carlini was clear that he thought Mr. Tamraz had PD – not manganism. The term manganese-induced parkinsonism was simply a label he attached to Mr. Tamraz's PD to emphasize his belief that it was caused by manganese exposure.

Petitioners also argued in the alternative that, assuming Dr. Carlini had diagnosed PD rather than manganism, his causation opinion could be supported by scientific literature. But it was literature with which Dr. Carlini was entirely unfamiliar. As far as

Dr. Carlini knew, science did not accept any connection between manganese exposure and PD, a disease with no cause known to science. And Dr. Carlini had not done any of his own research to establish such a link. Nonetheless, the trial court summarily denied respondents' motion without oral argument and without any written order. (Pet. App. D, at 131a-132a.)

Throughout the trial, petitioners relied heavily on Dr. Carlini's admittedly speculative causation opinion to argue that respondents' products were the proximate cause of Mr. Tamraz's injuries. Indeed, Dr. Carlini's untested hypothesis became the centerpiece of petitioners' case. During closing arguments, for example, petitioners' counsel told the jury that "Dr. Carlini alone proves by a preponderance of the evidence that this man has manganese-induced parkinsonism." (*Id.* at 22a.)

The jury ultimately returned a verdict in favor of petitioners, awarding $20.5 million in damages. (*See* Pet. App. B, at 44a.) The defendant manufacturers filed motions to overturn this verdict under Rule 50 of the Federal Rules of Civil Procedure, but the district court denied the challenges of every defendant except The BOC Group, Inc., against whom the court found insufficient evidence to sustain the verdict. (*Id.*)

4. Appellate Proceedings. Respondents appealed, arguing, *inter alia*, that the district court should not have admitted Dr. Carlini's opinion that their products caused Mr. Tamraz's PD because the testimony did not satisfy the requirements of Rule 702 of the Federal Rules of Evidence. (Pet. App. A, at 4a.) The Sixth Circuit agreed, holding that admission of Dr.

Carlini's causation opinion was an "abuse of discretion" because it involved multiple "speculative jumps." (See *id.* at 4a, 10a, 13a (noting that "Dr. Carlini's opinion contains not just one speculation but a string of them").)

The court of appeals spelled out each of the four speculative links in Dr. Carlini's theory of causation. First, the court found, Dr. Carlini merely hypothesized that "toxins combined with genetics may cause [some] cases of PD." (*Id.* at 9a.) Indeed, he "described the literature hypothesizing a link between environmental toxins and latent genetic Parkinson's Disease as 'all theoretical.'" (*Id.* at 10a.) Next, Dr. Carlini theorized that manganese is "a possible candidate for triggering" PD because it "is known to cause manganism" (*id.* at 9a), although "he conceded he knew of no studies finding a link between manganese and Parkinson's Disease and that 'studies that have looked at that . . . have not found a very strong correlation.'" (*Id.* at 10a.) Then, Dr. Carlini posited that Mr. Tamraz "may have the genes for" PD in a leap that he himself conceded was "speculation." (*Id.* at 9a-10a.) And finally, he guessed that manganese "may have triggered these genes" and caused Mr. Tamraz's PD. (*Id.* at 9a.)

The court of appeals found this last step particularly problematic. It noted that "Dr. Carlini never explained how he made this leap – how *this* case stemmed from manganese exposure." (*Id.* at 11a.) This was problematic because, even if "manganese *could cause* Parkinson's Disease in someone like Tamraz[, that] does not show that manganese *did cause* Tamraz's" PD. (*Id.* at 10a-11a.) Indeed, given the science, the presumption would have to be the

opposite – "Parkinson's Disease occurs commonly in the general population and usually without any known cause. Any given case of Parkinson's Disease thus might have occurred regardless of manganese exposure, making it hard to attribute one case to manganese over all of the other possible causes." (*Id.* at 11a.) The "closest" thing to an explanation offered by Dr. Carlini was the "early onset" of PD in Mr. Tamraz. (*Id.* at 11a-12a.) But the court of appeals rightly rejected this analysis as insufficiently rigorous, observing that Dr. Carlini himself acknowledged that ten percent of PD cases develop before age 50, "which, considering the high prevalence of Parkinson's Disease, does not create an inference that something particularly unusual must have caused it in Tamraz, who was 41 to 44 years old at the onset of his symptoms." (*Id.* at 12a.)

For all of these reasons, the Sixth Circuit concluded that Dr. Carlini's causal opinion suffered "from a lack a foundation both for why manganese could cause Parkinson's Disease and why manganese caused this case of Parkinson's Disease." (*Id.* at 12a.) The court carefully acknowledged that Rule 702 "does not require anything approaching absolute certainty." (*Id.* at 13a.) "Yet, so long as there is a line, some forms of testimony may cross it, and that happened here." (*Id.*) The court again emphasized the fact that Dr. Carlini's testimony was admittedly "speculative" in multiple respects, resulting in significant gaps in his reasoning. (*Id.*) And such reasoning – where "A suggests by analogy the possibility of B, which might also apply to C, which, if we speculate about D, could eventually trigger E" – is inadmissible under Rule 702. (*Id.*) "At some point, the train becomes too long to pull and the couplings

too weak to hold the car together." (*Id.*) Accordingly, the trial court erred in admitting the testimony.

Finally, in light of the emphasis that plaintiffs placed upon Dr. Carlini's testimony at trial, the court of appeals further determined that this error substantially affected the judgment in favor of the plaintiffs and remanded for a new trial. (*Id.* at 22a-24a ("Given the importance of Dr. Carlini's testimony, we cannot say with 'fair assurance' that the result would have been the same without it.").)[1]

Judge Martin dissented, expressing his belief that the majority had not afforded sufficient deference to the district court. (*Id.* at 27a.) But the dissent appeared to embrace something more akin to abdication than deference. It would have held that a court of appeals has no authority to reverse a *Daubert* ruling admitting expert evidence unless "it is absolutely clear that the testimony is nothing more than 'junk science' that the jury cannot be trusted to evaluate." (*Id.* at 32a.) In practice, this would be no role at all since, in the dissent's view, "[i]t is for the district court to determine whether expert testimony is essentially 'junk science.'" (*Id.* at 35a.) In other words, a district court's decision to admit expert evidence would be all but unreviewable. Apparently, no other judges on the court were willing to accept this stance; petitioners requested that the Sixth Circuit rehear the case en banc, but only Judge Martin would have granted rehearing. (Pet. App. C, at 127a.) Petitioners now seek this Court's discretionary review.

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[1] Petitioners do not dispute this portion of the Sixth Circuit's ruling.

REASONS FOR DENYING THE PETITION

The ruling of the court of appeals is in harmony with those of other circuits and this Court's precedents. It was also rightly decided – under the proper standard – leaving nothing for this Court to correct and no compelling argument for it to grant review.

I. The Sixth Circuit's Ruling Does Not Conflict With Those Of Other Circuits Regarding The "Ruling Out" Phase Of Differential Etiologies.

Petitioners first contend that this Court's review is needed to resolve a purported split among the courts of appeals that resulted from the ruling below. Not so. No split exists, and petitioners' argument to the contrary rests on a tortured reading of the decision of the court of appeals.

According to petitioners, Dr. Carlini's opinion was the result of a reliable differential etiology – that is, a methodical analysis in which all possible causes were ruled in and then ruled out one by one until the remaining cause is left as the most likely. Petitioners contend that other courts of appeals that have considered this methodology have properly held that causation experts need not definitively "'rule out every possible cause of the plaintiff's illness'" (Pet. 28 (quoting *Heller v. Shaw Indus., Inc.*, 167 F.3d 146, 156 (3d Cir. 1999))), while the court of appeals in this case "requires them to rule out with conclusive finality all other unknown agents or to prove every inference or assumption in their thinking" (*id.* 27-28).

But the ruling below holds nothing of the sort. Indeed, it expressly disclaimed a requirement of conclusive finality, acknowledging that Rule 702 "does

not require anything approaching absolute certainty." (Pet. App. A, at 13a.) Nor did it adopt a general approach to differential etiologies that requires an expert to affirmatively rule out all causes but one. To the contrary, it cited with approval prior Sixth Circuit decisions holding that differential etiologies were admissible despite alleged infirmities, including one doctor's opinion that had only "ruled out *most* alternative causes" because the factors he had not ruled out were not shown to be likely causes of the injury at issue. (*Id.* at 20a (emphasis added) (citing *Best v. Lowe's Home Ctrs., Inc.*, 563 F.3d 171, 179 (6th Cir. 2009)).) *See also Best*, 563 F.3d at 179 ("the core of differential diagnosis" is only "a requirement that experts at least *consider* alternative causes") (emphasis added) (quoting *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 759 (3d Cir. 1994)).

Here, the problem for petitioners under the facts of their specific case was that "unknown (idiopathic) causation currently accounts for the vast majority of Parkinson's Disease cases, making it impossible to ignore and difficult to rule out." (Pet. App. A, at 20a (punctuation omitted).) Petitioners argue that Mr. Tamraz's early onset and his occupational history support Dr. Carlini's conclusion that Mr. Tamraz's PD was more likely caused by manganese exposure than idiopathic in origin. (Pet. 26-28.) But early onset occurs in "roughly ten percent of people" who develop PD; thus, "considering the high prevalence" of PD, early onset "does not create an inference that something particularly unusual must have caused it in Tamraz." (Pet. App. A, at 12a.) Petitioners also contend that respondents' experts agree that early onset is a sign of a genetic predisposition (Pet. 26); but that is only with respect to developing PD gener-

ally, not developing PD *as a result of exposure to manganese*. As the court of appeals pointed out, Dr. Carlini admitted that "the base probability of getting parkinsonism from" a genetic predisposition "is unknown." (Pet. App. A, at 11a.)

Nor does Mr. Tamraz's occupational history change the analysis. Because Dr. Carlini knew of no study that establishes any correlation between manganese exposure and PD, he had no basis to conclude (or even guess) that exposure to manganese would meaningfully increase the chances of developing PD. Thus, Dr. Carlini's supposed bases for ruling out an idiopathic origin as the most likely cause of Mr. Tamraz's condition lacked any scientific support. *See Bland v. Verizon Wireless, (VAW) LLC*, 538 F.3d 893, 897 (8th Cir. 2008) ("Where the cause of the condition is unknown in the majority of cases, [the expert] cannot properly conclude, based upon a differential diagnosis, [that the plaintiff's] exposure to freon was 'the most probable cause' of [his] exercise-induced asthma."). (*See also* Pet. App. A, at 11a (citing *Bland* and another similar case with approval).)

Contrary to petitioners' suggestion, the Sixth Circuit's approach was not in conflict with that of the Third and Fourth Circuits. All three courts require that a differential etiology or diagnosis satisfy a minimum "reliability" threshold. Compare Pet. App. A, at 18a, with *Heller*, 167 F.3d at 157 (noting that "some reliable basis for a causation conclusion must exist"), and *Westberry v. Gislaved Gummi AB*, 178 F.3d 257, 265-66 (4th Cir. 1999) (citing precedent for the proposition that, where a defendant points to an alternative plausible cause other than the defendant's actions, it "becomes necessary for the

plaintiff's expert to offer a good explanation as to why his or her conclusion remains reliable") (internal quotation marks and citation omitted). And like the Sixth Circuit, the Third and Fourth Circuits have rejected differential etiologies and diagnoses that they determined did not meet this minimum threshold. *See, e.g.*, *Cooper v. Smith & Nephew, Inc.*, 259 F.3d 194, 202 (4th Cir. 2001) (affirming exclusion of unreliable causation opinion purportedly based on differential etiology because, among other things, it failed to rule out alternative causes, and a differential etiology is not reliable where "an expert utterly fails to consider alternative causes or fails to offer an explanation for why the proffered alternative cause was not the sole cause"); *Feit v. Great W. Life & Annuity Ins. Co.*, 271 F. App'x 246, 254 (3d Cir. 2008) (holding that expert's theory of cause of death was not based on a reliable differential diagnosis because the expert failed to consider and rule out all possible causes). In short, each of these jurisdictions applies identical requirements to differential etiologies.[2] That is reason enough to deny the petition.

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[2] So do the other courts of appeals. *See, e.g.*, *Guinn v. Astrazeneca Pharms. LP*, 602 F.3d 1245, 1253 (11th Cir. 2010) (indicating that, in order for a differential diagnosis to be admissible, it needs to provide a "reliable" basis for an opinion on causation); *Ervin v. Johnson & Johnson, Inc.*, 492 F.3d 901, 904 (7th Cir. 2007) (upholding district court's determination that an expert's differential diagnosis "was tainted by critical flaws leaving his opinions unreliable under the standards set forth in Rule 702 and *Daubert*") (internal quotation marks and citation omitted); *Norris v. Baxter Healthcare Corp.*, 397 F.3d 878, 886 (10th Cir. 2005) ("Plaintiff's experts' differential diagnoses and case studies are scientifically unreliable because they as-

There is another reason as well. Even if petitioners had demonstrated a genuine split, this case would not be a proper vehicle to resolve it. After all, petitioners contend that the decision below created a split over whether a doctor performing a differential etiology must rule out "all possible alternative causes" with "conclusive finality." (Pet. 28.) But the court of appeals determined that Dr. Carlini's opinion was unreliable as to *both* the rule-in and rule-out phases of his analysis. (Pet. App. A, at 18a-19a ("Dr. Carlini's opinion fails the last two prongs because . . . his efforts to 'rule in' manganese exposure as a possible cause or to 'rule out' other possible causes turned on speculation, not a valid methodology.").) No division in authority is claimed as to the "rule-in" standard applied by the court of appeals, and thus no basis is presented for its review. *See, e.g.*, Eugene Gressman et al., *Supreme Court Practice* § 4.4(f), at 248 (9th ed. 2007) ("If the resolution of a clear conflict is irrelevant to the ultimate outcome of the case before the Court, certiorari may be denied.") (citing

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sume . . . a causal connection[.]"); *Amorgianos v. Nat'l R.R. Passenger Corp.*, 303 F.3d 256, 265 (2d Cir. 2002) (holding that, where an expert opinion is based on data or studies that are inadequate to support the conclusions reached, *Daubert* and Rule 702 mandate exclusion of that "unreliable" opinion testimony); *Glastetter v. Novartis Pharms. Corp.*, 252 F.3d 986, 991 (8th Cir. 2001) (noting the difficulty in "reliably extrapolating" from the results of a study to prove causation in a differential diagnosis); *Moore v. Ashland Chem., Inc.*, 151 F.3d 269, 275 (5th Cir. 1998) (en banc) (indicating that, where a proposed expert conducts a differential diagnosis, the causation opinion must be based on "good grounds," which equates to a standard of "evidentiary reliability").

Sommerville v. United States, 376 U.S. 909 (1964)). For this reason too, certiorari should be denied.

II. The Sixth Circuit's Ruling Does Not Depart From This Court's Precedent Regarding The Standard Of Review.

Petitioners also contend that review is needed because the court of appeals departed from this Court's precedent establishing an abuse-of-discretion standard for appellate review of district court rulings under Federal Rule of Evidence 702. (Pet. 29-31.) In so arguing, petitioners ignore the court's explicit invocation of the abuse-of-discretion standard (*see* Pet. App. A, at 4a ("we review . . . for abuse of discretion")), and instead echo the dissent's accusation that the majority in fact applied *de novo* review (*see* Pet. App. A, at 30a; Pet. 15).

But it was the dissent (and now petitioners) that advocated an improper standard of review – not the majority. Under the dissent's approach, courts of appeals would be barred from reversing a decision to admit expert testimony unless it is "absolutely clear that the testimony is nothing more than 'junk science'"; at the same time, the dissent would commit the exclusive authority to decide what is "junk science" to the district courts. (Pet. App. A, at 32a, 35a.) That leaves no role for the courts of appeals at all. As long as a district court does not affirmatively declare evidence to be "junk science" and then proceed to admit it at trial regardless, its decision would be unreviewable.

That is not the law. In *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 152 (1999), the Court reaffirmed "the importance of *Daubert*'s gatekeeping require-

ment," explaining that a district court has a duty "to ensure the reliability and relevancy of expert testimony." Three Justices concurred fully in the judgment but wrote separately to emphasize this point, noting that the district court's discretion in performing its role "is not discretion to abandon the gatekeeping function." *Id.* at 158-59 (Scalia, J., concurring); *see also id.* at 159 ("I think it worth adding that it is not discretion to perform the function inadequately."). The courts of appeals share this understanding – that the abuse-of-discretion standard does not mean insulation from review – and have reversed district courts for admitting unreliable expert testimony where appropriate. *See, e.g.*, *Cruz-Vazquez v. Mennonite Gen. Hosp., Inc.*, 613 F.3d 54, 57 (1st Cir. 2010) (noting that a trial court's "discretion is not without bounds"); *McClain v. Metabolife Int'l, Inc.*, 401 F.3d 1233, 1238-55 (11th Cir. 2005) (reversing and remanding for a new trial where the district court abused its discretion by allowing plaintiffs' experts in a toxic tort case to take "leaps of faith"); *Joy v. Bell Helicopter Textron, Inc.*, 999 F.2d 549, 567-69 (D.C. Cir. 1993) (reversing district court's admission of expert testimony in wrongful-death case where the testimony was highly speculative); *In re Air Crash Disaster at New Orleans, La.*, 795 F.2d 1230, 1233-35 (5th Cir. 1986) (same); *Gumbs v. Int'l Harvester, Inc.*, 718 F.2d 88, 98-99 (3d Cir. 1983) (reversing and remanding for a new trial where, *inter alia*, the district court admitted expert testimony that lacked a sufficient factual foundation). The Sixth Circuit did the same here – and did so under the proper standard.

Although petitioners do not identify any particular aspect of the court of appeals ruling that

supposedly reflects *de novo* review, they do contend elsewhere in their petition that the court of appeals made three errors (in addition to the alleged error in its "rule-out" analysis, discussed in Part I, *supra*). To the extent petitioners intend to argue that these three supposed errors reflect application of an improper standard, their arguments fail – badly.

First, petitioners defend Dr. Carlini's reliance on literature speculating about a link between environmental toxins such as manganese and a genetic predisposition to PD. (*Id.* 23.) But Dr. Carlini himself admitted that this was "all hypothetical" rather than proven science. (Pet. App. A, at 10a.) That concession alone justifies the Sixth Circuit's conclusion. *Cf. J.B. Hunt Transp., Inc., v. Gen. Motors Corp.*, 243 F.3d 441, 444 (8th Cir. 2001) ("Because of the deficiencies at the core of his opinion, including his own admission concerning his inability to scientifically reconstruct the accident, the [expert's] resulting conclusion . . . was mere speculation and pure conjecture."). Petitioners counter that other scientists believe PD is "most likely caused by a combination of genetic and environmental factors," citing an article by Dr. Irene Litvan and respondents' expert, Dr. Anthony Lang, among others. (*See* Pet. 23-24 (citing Litvan et al., *The etiopathogenesis of Parkinson's disease and suggestions for future research: Part I*, J. Neuropathol. Exp. Neurol. 66(4):251-257 (2007)).) But the second part of the same article refers to this belief as a "hypothesis." Litvan et al., *The etiopathogenesis of Parkinson's disease and suggestions for future research: Part II*, J. Neuropathol. Exp. Neurol. 66(5):329-336 (2007). The article concedes, moreover, that "despite a large number of studies" of "candidate genes," the "great

majority of the published associations in the area of PD have not been replicated." *Id.* Indeed, petitioners' own word choice betrays the speculative nature of this evidence, claiming that the genetics hypothesis is an "evolving" one that is "emerging" in "a lot of studies" and in "a lot of thinking." (*See* Pet. 23.) Thus, the court of appeals rightly concluded that this part of Dr. Carlini's opinion was "no more than a hypothesis" that did not qualify as "'knowledge.'" (Pet. App. A, at 9a.)

Petitioners next defend Dr. Carlini's hypothesis that, because manganese is known to cause manganism, it would be a possible candidate for triggering PD as well. (Pet. 24.) But Dr. Carlini conceded that he knew of no studies that found a link between manganese and PD. (Pet. App. A, at 10a.) Petitioners complain that the particular concession quoted by the Sixth Circuit came from testimony about studies looking at manganism rather than PD. (Pet. 24.) But this is a red herring – the Sixth Circuit cited numerous other parts of Dr. Carlini's testimony that it did not quote, and these portions made clear that he could not cite "a single study" to support his belief that manganese could combine with genetic factors to cause or accelerate PD because such studies "don't exist yet." (J.A. 599.) Moreover, petitioners do not dispute the Sixth Circuit's observation that the studies that have looked for a link between manganese and PD have found nothing. (Pet. App. A, at 10a ("'Epidemiological studies have failed to find a correlation between manganese and Parkinson's disease.'") (quoting J.A. 623).) As they did below, petitioners fail to identify even one countervailing study establishing a link between manganese and PD. (*See* Pet. 24.)

Finally, petitioners defend Dr. Carlini's hunch that Mr. Tamraz may have had the hypothesized genetic predisposition to PD. (*Id.* 24-25.) Dr. Carlini, however, openly conceded that it was only "speculation" – not hard scientific proof – that led him to guess that Mr. Tamraz had an "underlying predisposition" to PD, even though Mr. Tamraz has no family history of PD. (Pet. App. A, at 10a.) Notably, Dr. Carlini performed no genetic tests, did not know what to test for, and did not know how much a hypothesized predisposition would increase someone's odds of getting PD. (*Id.* at 11a (noting that Dr. Carlini only explained "tests he *might* do, not tests he had done").) Petitioners counter that because "there are *probably*" a number of people who have a genetic predisposition to PD but never get the disease, there *could have been* members of Mr. Tamraz's family who were predisposed to develop PD and Mr. Tamraz could have inherited a genetic predisposition from them. (*See* Pet. 24-25 (emphasis added).) This argument, in and of itself, is "speculative three times over." (Pet. App. A, at 10a (citing *Siharath v. Sandoz Pharm. Corp.*, 131 F. Supp. 2d 1347, 1371 (N.D. Ga. 2001) ("Three scientifically unwarranted 'leaps of faith' exist in this causal chain."), *aff'd*, 295 F.3d 1194 (11th Cir. 2002)).) Indeed, the most petitioners can say with respect to this tenuous reasoning is that it does not "conclusively defeat [Dr. Carlini's] overall theory of causation." (Pet. 25.)

In short, "the district court enjoys broad discretion over where to draw the line" on the admissibility of expert testimony, but "so long as there is a line, some forms of testimony may cross it, and that happened here." (Pet. App. A, at 13a.) Dr. Carlini's causation testimony was nothing more than "guess-

work," and "'the courtroom is not the place for scientific guesswork, even of the inspired sort.'" (Pet. App. A, at 12a-13a (quoting *Rosen v. Ciba-Geigy Corp.*, 78 F.3d 316, 319 (7th Cir. 1996)).) For these reasons, the district court *did* abuse its discretion in admitting Dr. Carlini's causation opinion, the court of appeals reversed and remanded under the proper standard, and there is no reason for this Court to disturb that judgment.

CONCLUSION

For the foregoing reasons, the Court should deny the petition for a writ of certiorari.

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